Updating Your Practice: The 2017 Sepsis Guidelines

Q&A From the Live Webinar

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The AACN Critical Care Webinar Series™ is not only an efficient way to learn from true thought leaders within our community; it also serves as the seed of robust discussion among colleagues. To encourage continued discussion, our expert has responded to participant questions not addressed during the live webinar. Please enjoy reading the responses below.

Our expert’s responses to your questions:

Q: When do you expect the new sepsis bundles to be published?
A: The bundles are reviewed through a systematic process by the Surviving Sepsis Campaign (SSC). If the SSC does decide to update the bundles, they will be posted at www.survivingsepsis.org.

Q: Are there pediatric-specific guidelines, or variations to these recommendations for pediatric patients?
A: Not at present. However, a pediatric workgroup recently has been formed recently to develop guidelines.

Q: Since the definition of sepsis has changed, what is now defined as bacteria in the blood without organ dysfunction?
A: That is an interesting question. There certainly could be bacterium without an organ dysfunction. Per reviewing coding definitions, that could be described as an infection related to whatever the source is.

Q: How do these new guidelines line up with CMS Core Measures? CMS has not endorsed/adopted the new sepsis definitions or guidelines. When is this change expected?
A: Neither the 2016 definitions nor the new guideline align with CMS Core Measures currently. I am unaware of a time frame in which they will be reviewed by CMS, but there are sepsis leaders from the guidelines and the definitions who will be discussing with CMS.

Q: I think I heard you say that time 0 in the ED is time of triage. My hospital is figuring out when the severe sepsis/septic shock criteria are met and using that as time 0. Is there something clearly written in the CMS standards that indicates use of ED triage?
A: The Surviving Sepsis bundles still instruct us to use time 0 in ED as time of triage. The CMS standards for Sep-1 in version 5.2 of the manual have several different criterion notes. For example, if severe sepsis (definition prior to 2016 sepsis definitions) is present on arrival to the ED or identified in triage, then the presentation time is the time that the patient was triaged. If the patient arrives to the ED with severe sepsis criteria, then the presentation time is the ED arrival time. Please read the entire manual, as there are many scenarios with guidance for the chart abstractors.

Q: Is using procalcitonin a best practice for sepsis diagnosis?
A: No, procalcitonin has a weak recommendation with low quality of evidence both to shorten the duration of antibiotic use and to discontinue. The verbiage used is “we suggest” What the authors have stated is that clinicians should consider that different choices may be appropriate for various
The recommendation for 30 mL/kg is a strong recommendation with moderate quality of evidence.

Please share best practices about fluid resuscitation in patients with a history of CHF, decreased EF, ARDs, aneurysms, and chronic or acute renal failure. Does the 30 mL/kg bolus apply to all? Where does clinical judgement come in? How best to communicate with physicians about this?

The recommendation for 30 mL/kg is a strong recommendation with moderate quality of evidence.
Some of the strengths of the current guidelines that may help to alleviate apprehension is the adoption of the best practice statement to further assess hemodynamic function, along with the suggestion to use dynamic measures for fluid responsiveness. There is an excellent companion article to the guidelines (A User’s Guide to the 2016 Surviving Sepsis Guidelines, www.survivingsepsiscampaign.org) that you may want to read.

Q: Does the 30 mL/kg resuscitation only apply to hypotensive patients, or also those who might just have elevated lactate and are normotensive?

A: The strong recommendation with low quality of evidence is to resuscitate with ≥30 mL/kg in the first 3 hours for patients with sepsis-induced hypoperfusion. Further in the discussion section of the document, sepsis-induced hypoperfusion is defined as that manifested by acute organ dysfunction and/or ± decreased blood pressure and increases serum lactate.

Q: Is SOFA similar to an APACHE score? We recently adopted APACHE scores to monitor patient outcomes. We do it on admission to ICU and upon discharge or transfer.

A: Both tools are specific to the ICU only. The APACHE (Acute Physiologic and Chronic Health Evaluation) score is a severity score and mortality estimation tool specific to ICU patients from multiple disease states. It uses the worse values within the first 24 hours of admission to predict mortality. While SOFA (Sequential [sepsis-related] Organ Failure Assessment) is also a predictive score; it is ongoing, specific to sepsis, and uses values from the first 24 hours and every 48 hours afterwards.

Q: What is your experience with the MEWS assessment tool vs SOFA?

A: I don’t have any specific experience with the MEWS (modified early warning score).

Q: Please check your citation for the SOFA and qSOFA slide. It says Vincent et al, 1998(?). qSOFA was just published last year, right?

A: The Vincent et al citation was for the SOFA score. The appropriate citation for qSOFA is found in the reference list at the end of the slides (Singer, et al JAMA. 2016;315(8):801-810). AACN apologizes for not having both citations on the slide.

Q: I thought subsequent research showed the qSOFA tool was not valid. Can you speak to this?

A: You are correct in that there was a retrospective study published online in the September 16 issue of the American Journal of Respiratory and Critical Care Medicine by Churpek, et al., that found that early warning scores (eg, NEWS, MEWS) were more accurate in predicting hospital mortality. In 2016, Chen, et al in Critical Care found that qSOFA was a better identifier of mortality and ICU admission than CRB-65 (confusion, respiratory rate, systolic blood pressure, age ≥65 years). In 2017, Freund, et al wrote in JAMA that qSOFA had better predictive value in the emergency department than SIRS. One of the recommendations from the authors of the Sepsis-3 definitions published in 2016 was to continue to validate the use of qSOFA. In my opinion, before excluding the use of qSOFA, we need to wait for additional research and discussion.

Q: How and where did you integrate qSOFA into your practice?

A: As an example, at my facility, we have a screening tool for sepsis (as many facilities do) that is embedded in our electronic medical record. We have been working on layering in qSOFA for added information. And it may provide screening in both directions. If a patient is identified with an infection and has a positive qSOFA, then we may be able to focus resources on that patient earlier and more effectively. In addition, if qSOFA is used as a general screen, you would need to work backwards to assess for the presence of an infection.
Q: Are there any examples of screening tools that have incorporated the SOFA and qSOFA?

A: SOFA score does not diagnose sepsis or infection. But the SOFA score can help to identify patients who could have a high risk of death from infection. It does not preclude your current screening tools to identify patient with an infection who may have sepsis, but could serve as an added layer for focusing in on patients with a higher risk of mortality. As an example, at my facility, we have a screening tool for sepsis, as many facilities do, that is embedded in our electronic medical record. We have been working on layering in qSOFA for added information.

Q: Is SOFA done at point of diagnosis, or once the patient discharged?

A: SOFA is a predictive score that is done in general at the end of the first 24 hours and then Q 48 hours after while the patient is in the ICU. qSOFA frequency was not described in the original literature describing the Sepsis-3 definitions. However, it was discussed as an adjunct to screening to determine organ dysfunction and which patients to focus on because of increased risk of mortality.

Q: What is the best vasopressor to use? Norepinephrine bitartrate (Levophed)? Vasopressin?

A: There is a strong recommendation with moderate quality of evidence to use norepinephrine as the first-choice vasopressor. Adding vasopressin to norepinephrine at 0.03 unit/min is a weak recommendation with low to moderate evidence to help decrease norepinephrine dosage. In the discussion section of the guideline, vasopressin is not recommended as a first-line vasopressor.

Q: Is it better to use LR or NS?

A: The guidelines do not make a recommendation other than crystalloid, and in fact discuss that they were unable to recommend isotonic normal saline vs balanced solutions such as lactated ringers, Plasma-Lyte, etc., over the other due to the lack of research making a direct comparison.

Q: Are there specific recommendations in the guidelines as to which ventilator mode is better? I have seen an increase in use of controlled mechanical ventilation (CMV), with what appears poor sedation control.

A: There is no specific mention of mode, but rather targets for sepsis-induced ARDS patients, tidal volume of 6 mL/kg, an upper limit for plateau pressures of 30 cm H₂O, higher PEEP vs lower PEEP, and recruitment maneuvers. There is also a recommendation for lower tidal volumes in sepsis-induced respiratory failure without ARDS. You are correct in that CMV is a mode where the minute ventilation is determined by a set respiratory rate and tidal volume, with no patient work, requiring heavy sedation and/or neuromuscular blockade. This is unlike assist control, in which the patient can initiate breaths, with each breath being a set tidal volume.

Q: Do the guidelines recommend continuous renal replacement therapy (CRRT) for acute kidney injury?

A: The guideline suggests that either CRRT or intermittent renal replacement therapy be used with sepsis and acute kidney injury as a weak recommendation and moderate quality of evidence. There is a suggestion to use CRRT to facilitate fluid balance in hemodynamically unstable sepsis patients as a weak recommendation with very low quality of evidence.

Q: What do the guidelines say about use of steroids?

A: It is suggested that hydrocortisone not be used in septic patients if they are hemodynamically stable after adequate fluid resuscitation and vasopressor therapy. If hemodynamic stability is not achieved, V hydrocortisone at 200 mg per day is suggested. Both are weak recommendations with low quality of evidence.
Q: Has anyone studied initiation of antibiotics within 1 hour vs within 3 hours?

A: Yes, there is a large body of literature associating an increased mortality with delays in antibiotics. The references are included in the discussion section on page 10 of the guideline. Each hour of delay has an accompanied increase in mortality. The goal of 1 hour is a strong recommendation with moderate quality of evidence.

Q: Does PLR = reverse Trendelenburg?

A: The passive leg raise maneuver involves measuring cardiac output or stroke volume during a set of patient position changes at prescribed intervals. This starts with the head of the bed elevated 45° and the legs flat, then the head flat and legs elevated 45° for 2-3 minutes, then returning the head of bed to 45° elevation and the legs flat. A tool for performing the procedure and interpreting the results is included in the Resources for this webinar.

Q: Are the slides available for print? I would like to share with the CC team.

A: The handouts from this webinar, as well as a recording of the live event, are available on the AACN website through the webinars page.